

**Montana Department of
ENVIRONMENTAL QUALITY**

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LEGISLATIVE ENVIRONMENTAL
POLICY OFFICE
Steve Bullock, Governor
Tracy Stone-Manning, Director

P. O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • Website: www.deq.mt.gov

July 23, 2014

Quarter Circle One, LLC., 140 Jeffers Loop Rd., Ennis, MT 59729
Ray Smail, PO Box 122, Alder, MT 59710
Marc & Connie Lenart, 9905 Isabelle Rd., Lafayette, CO 80026
Dale & Karen Sisel, 84 Bear Creek Rd. E., Cameron, MT 59720
Jack & Phyllis Bowles, PO Box 245, Cameron, MT 59720
Jerry Leech, 654 Bear Creek Loop, Cameron, MT 59720
RCP Management Trust, 990 Wilson Rd., Whitewright, TX 75491
Jerry & Carol Dickinson, PO Box 192, Cameron, MT 59720
Juanita Webster, PO Box 735, Dillon, MT 59725
Braxton Ranch Corporation, PO Box 1377, Ennis, MT 59729
Madison County Health Department, 205 N Broadway St., Ennis, MT 59755
Madison County Commissioners, 205 N Broadway St - Second Floor, Ennis, MT 59755
Director, Department of Fish, Wildlife & Parks, 1420 E 6th Avenue, Helena, MT 59620
Lisa Peterson, DEQ, Director's Office, Helena, MT 59620
Jeff Ryan, DEQ, Water Protection Bureau, Helena, MT 59620
Environmental Quality Council, Capitol Complex, Helena, MT 59620
Documents Section, State Library, Capitol Complex, Helena, MT 59620

Ladies and Gentlemen:

To comply with the Administrative Rules of Montana, 17.4.607(2) and 17.4.609(2), the Department of Environmental Quality (DEQ), prepared the enclosed Environmental Assessment (EA). The attached EA is for the land application of septage, gray water, and grease trap waste in Madison County, Montana.

The purpose of the EA is to inform the public of the proposed action and to seek public participation in the decision-making process. Persons wishing to comment have until the close of business on August 22, 2014 to submit written comments concerning the proposal. DEQ will not make a final decision until after the comment period has ended.

If you wish to comment on this proposed action during the comment period, please do so in writing by mailing your comments to the Waste and Underground Tank Management Bureau, Solid Waste Program, P.O. Box 200901, Helena, MT 59620-0901, or by E-mail to mailbox wutbcomments@mt.gov.

Sincerely,

John Collins
Environmental Science Specialist
Waste & Underground Tank Management Bureau

Enclosure: EA- South West Septic

MONTANA DEPARTMENT OF ENVIRONMENTAL QUALITY

Permitting and Compliance Division
Waste and Underground Tank Management Bureau
Solid Waste Section
PO Box 200901
Helena, MT 59620-0901

ENVIRONMENTAL ASSESSMENT (EA)

SECTION 1.0 – PROJECT DESCRIPTION:

Ray Smail, of South West Septic (applicant), has submitted an application to the Department of Environmental Quality (DEQ) for the approval of a new land application site for the disposal of septage, gray water, and grease trap waste. The proposed site is located on approximately 240 acres of Quarter Circle One, LLC property in Madison County. At the present time, the property is being used for the production of alfalfa and as grazing land. Land application will occur at this site on an as-needed basis.

Purpose of the Environmental Assessment:

In accordance with 75-1-102, Montana Code Annotated (MCA), the Montana Environmental Policy Act (MEPA) is procedural and requires the “adequate review of state actions in order to ensure that environmental attributes are fully considered by the legislature in enacting laws to fulfill constitutional obligations; and the public is informed of the anticipated impacts in Montana of potential state actions.” According to MEPA, EA’s are the procedural documents that communicate the process agencies follow in their decision-making. An EA does not result in a certain decision; but rather, it serves to identify the potential effect of a state action within the confines of existing laws and rules governing such proposed activities so that agencies make balanced decisions. The MEPA process does not provide regulatory authority beyond the authority explicitly provided in existing statute.

The Septage Disposal and Licensure laws and rules establish the minimum requirements for the land application of septage wastes. The EA is the mechanism that the DEQ uses to: 1) Determine whether a proposed land application site meets the minimum requirements for compliance with the current laws and rules and is therefore licensable as proposed; 2) Assist the public in understanding the licensing laws of the Septage Disposal and Licensure program; 3) Identify and discuss the potential environmental effects of the proposed land application activity if it is approved and becomes operational; 4) Discuss actions taken by the applicant and the enforceable measures and conditions of the license designed to mitigate the effects identified by DEQ during the review of the application; and 5) Seek public input to ensure DEQ has identified all the substantive environmental effects associated with the proposed land application of septage, gray water and grease trap waste on the above-noted property.

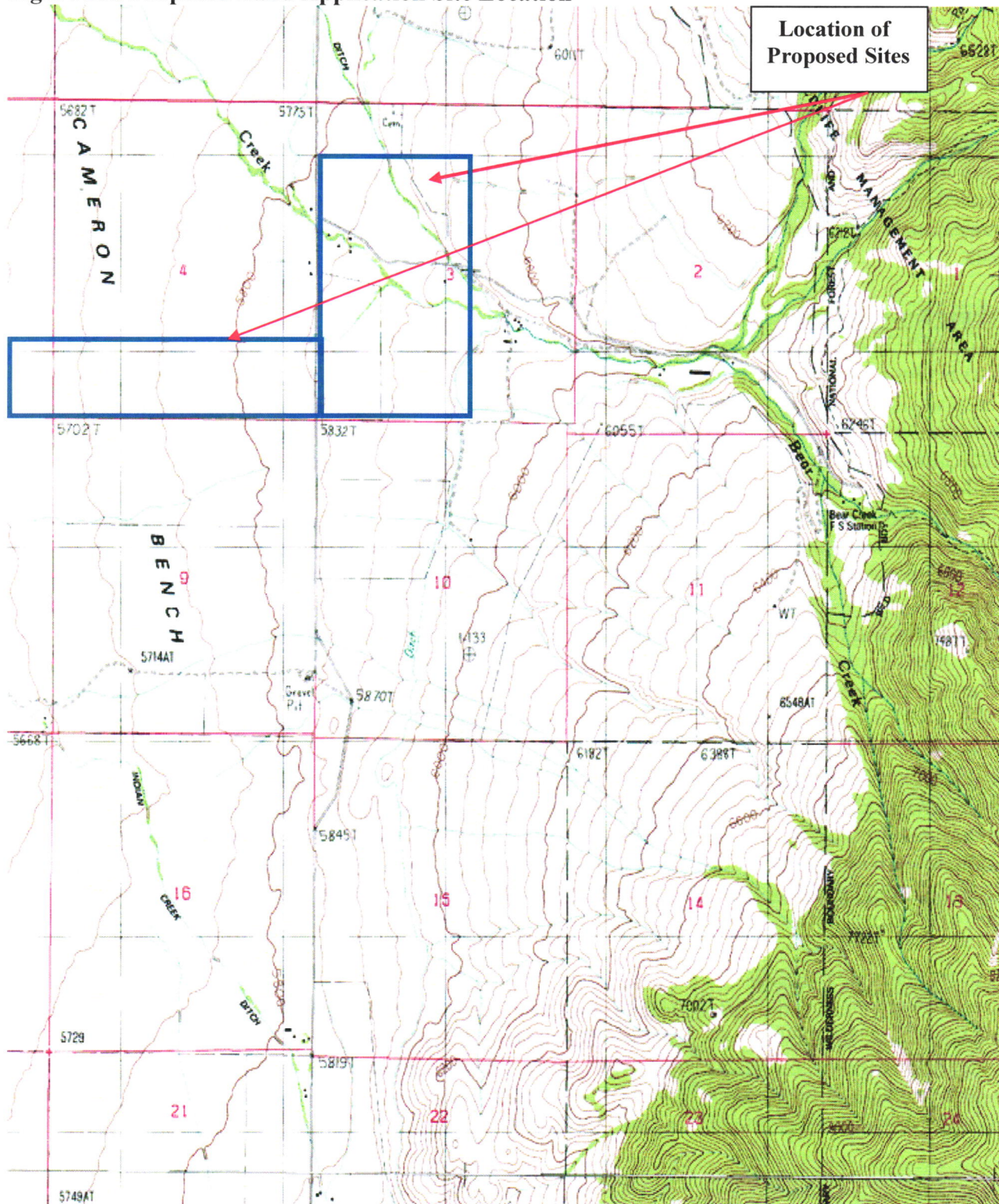
Benefits and Purpose of Project:

The land application of domestic septage is an economical and environmentally sound practice. A properly managed land application program provides benefits to agricultural land by the addition of organic matter and nutrients to the soil without adversely affecting public health. The land application of septage, gray water, and grease trap waste at this site will add nutrients, moisture, and will improve the soil tilth for the continued production of the alfalfa crop.

Site Location and Setback Requirements:

The proposed land application site is located on private property just off Bear Creek Loop in Sections 3 and 4, Township 8 South, Range 1 East, Montana Principal Meridian, Madison County, Montana (Figure 1.1). Of the 240 acres of the landowner's private property available, only 120 acres would be used for land application of septage, gray water, and grease trap waste.

Figure 1.1: Proposed Land Application Site Location



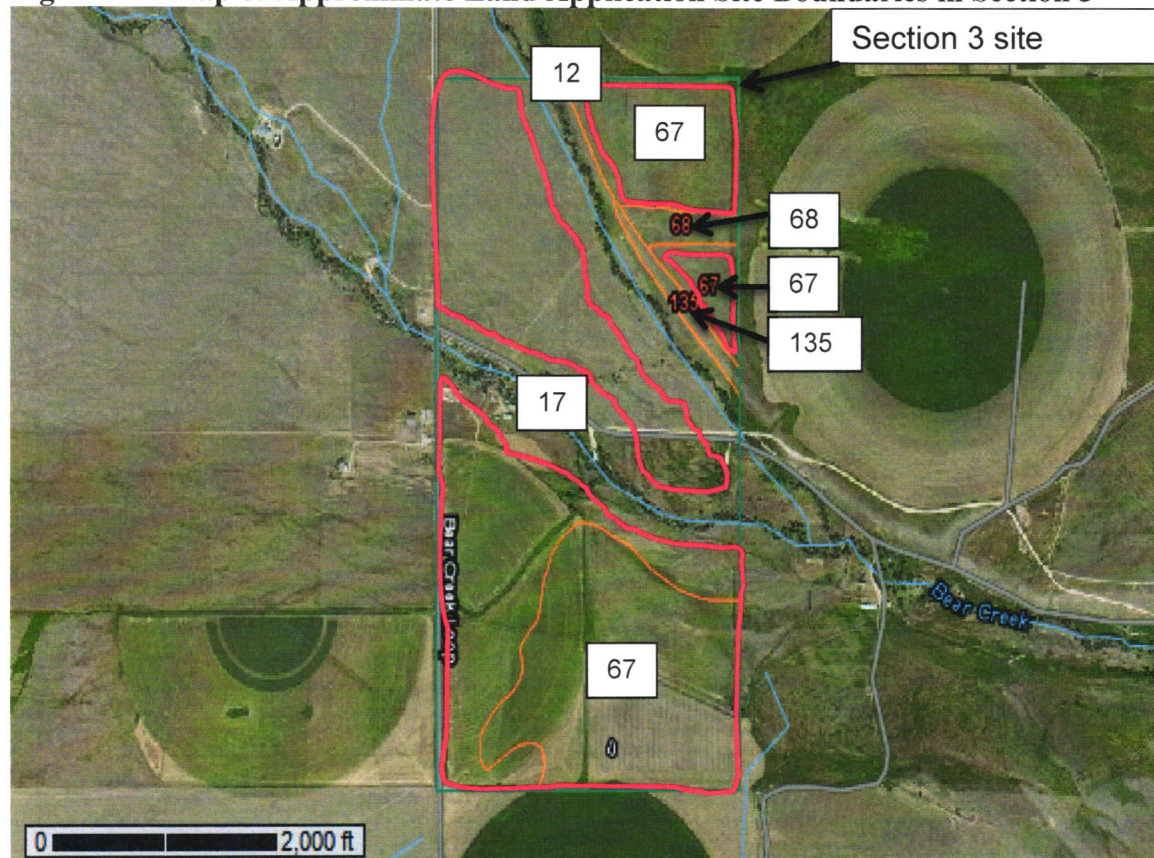
In accordance with the Administrative Rules of Montana (ARM), the setbacks noted in Table 1.1 must be maintained by the applicant during land application activities.

Table 1.1: Land Application Site Setback Requirements

ARM Reference	Setback Requirements
17.50.809(1)	Pumpings may not be applied to land within 500 feet of any occupied or inhabitable building.
17.50.809(2)	Pumpings may not be applied to land within 150 feet of any state surface water, including ephemeral or intermittent drainages and wetlands.
17.50.809(3)	Pumpings may not be applied to land within 100 feet of any state, federal, county or city-maintained highway or road.
17.50.809(4)	Pumpings may not be applied to land within 100 feet of a drinking water supply source.
17.50.809(6)	Pumpings may not be applied to land with slopes greater than 6%.
17.50.809(8)	Pumpings may not be applied to land where seasonally high ground water is 6 feet or less below ground surface.

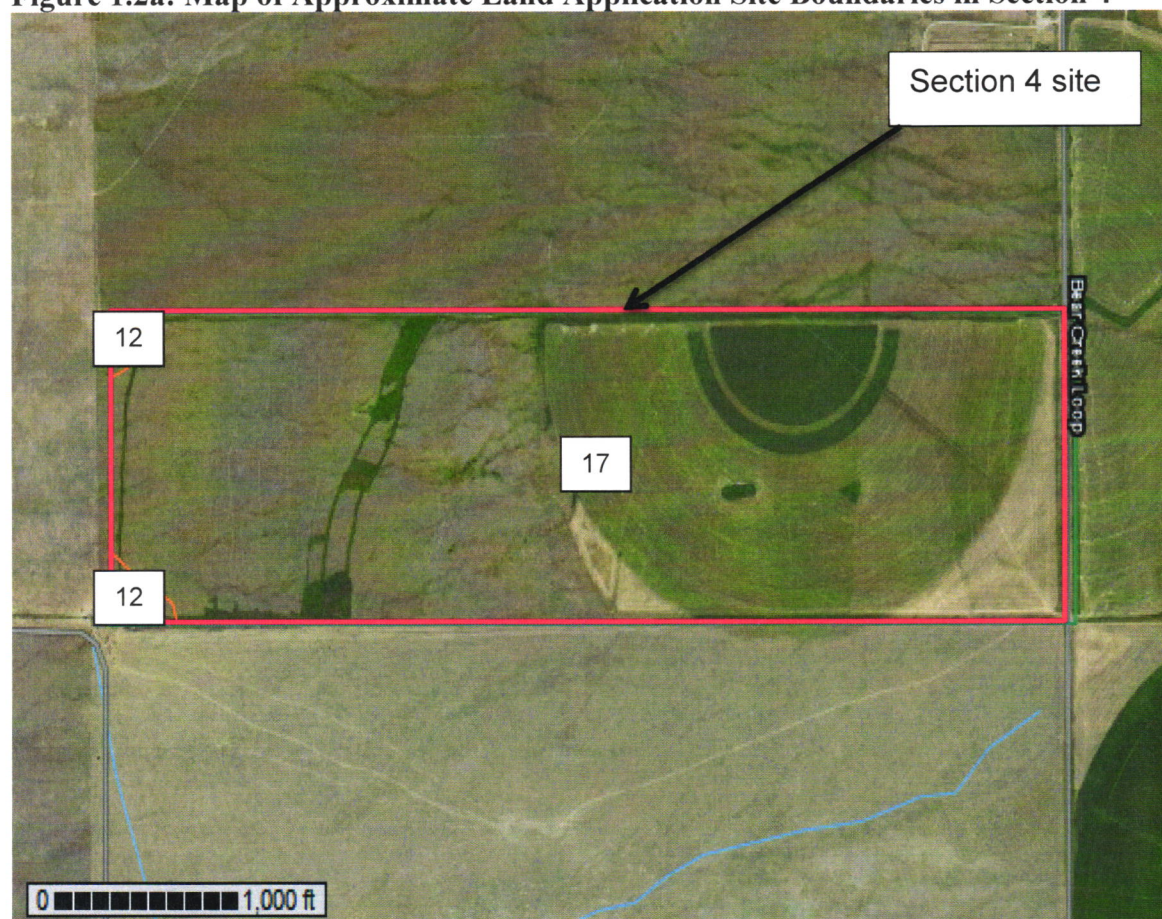
Figures 1.2 and 1.2a show the proposed site locations in reference to the locational features. The acreage proposed for land application will be located greater than 500 feet from any occupied or inhabitable building. Pumpings will not be applied within 150 feet of any state surface water, nor within 100 feet from any state, federal, county or city-maintained road. The proposed sites are greater than 100 feet from any drinking water supply.

Figure 1.2: Map of Approximate Land Application Site Boundaries in Section 3



(from: USDA-NRCS, Web Soil Survey, Madison County, Montana)

Figure 1.2a: Map of Approximate Land Application Site Boundaries in Section 4



(from: USDA-NRCS, Web Soil Survey, Madison County, Montana)

SECTION 3.2 - POTENTIAL IMPACTS OF THE PROPOSED LAND APPLICATION SITE ON THE HUMAN ENVIRONMENT (See Table 3.2)

10.0 Human Health & Safety

The septage, gray water, and grease trap waste will be land applied at the site on an as-needed basis. Pumpings will be land applied using a dispersive mechanism, consisting of either a spreader bar or a splash plate. The dispersive mechanism applies the waste in a wide, thin, even layer at a beneficial rate. Pumpings will be incorporated into the soil surface plow layer with a tractor and tillage equipment within six-hours of application. There are no additional health or safety concerns when the site is operated in accordance with the Septage Disposal regulations.

11.0 Demand for Government Services

The Madison County Environmental Health Department and DEQ Solid Waste Section will conduct periodic inspections at the site. No additional government services will be required.

12.0 Transportation

The land application site will be accessed off of Bear Creek Road. Bear Creek Road currently supports traffic to rural homes, farms and ranches, including heavy equipment associated with the current agricultural activities in the area. The site will be used on an as-needed basis by the applicant and will not cause a significant increase in traffic on Bear Creek Road.

6.0 Unique, Endangered, Fragile Or Limited Environmental Resources

A search of the Montana Natural Heritage Program indicated the Wolverine, Grizzly Bear, Ferruginous Hawk, Long-billed Curlew, McCown's Longspur and the Westslope Cutthroat Trout are listed as species of concern. Designation as a species of concern is not a statutory or regulatory classification. Instead, these designations provide a basis for resource managers and decision-makers to make proactive decisions regarding species conservation. Bear Creek is the surface water body located on the proposed site in Section 3. An intensive site survey was not conducted to verify the presence of, or impact to, sensitive, unique, endangered or fragile species within or adjacent to the proposed land application site because the site is currently used for the alfalfa production and livestock grazing. Therefore, due to the limited development and human population adjacent to the proposed site, there is adequate acreage of similar habitat available in the vicinity to accommodate any species that may be forced to relocate.

7.0 Historical and Archaeological Site

A cultural resource file search was conducted for the proposed locations that indicated there have been no previously recorded sites within the area. The State Historic Preservation Office feels there is a low likelihood cultural properties will be impacted and therefore a cultural resource inventory is unwarranted at this time. However, should cultural materials be inadvertently discovered during proposed operations at this site, the State Historic Preservation Office will be notified immediately.

8.0 Aesthetics

This site is located on farm land and not located on a prominent topographical feature. It is not visible from a highly populated area. The application of septage is similar to the day-to-day activities of farming and ranching and will not cause a change in the aesthetics of the area.

9.0 Agriculture

Agricultural activities in the area consist primarily of farming and grazing lands. Septage will be land applied at a rate not to exceed 28,846 gallons per acre per year. This will ensure that over application does not occur and that the alfalfa grown on the site can use the nitrogen being land applied. Land application sites are rotated on an annual basis to facilitate the production of crops that will utilize the nitrogen and other nutrients contained in the waste. The impacts on overall agricultural production in the area due to the proposed land application of septage, gray water, and grease trap waste at this site will be minor.

Table 3.3: Summary of Nearby Wells

Gwic Id	Site Name	Twn	Rng	Sec	Type	Td	Swl	Pwl	Yield	Date	Use
145513	BRIGGS D B	08S	01E	2	WELL	160	110		26	1/18/1992	
105267	NELSON JIM	08S	01E	3	WELL	560	410	460	15	4/27/1990	DOMESTIC
105269	SPHINX MOUNTAIN RANCH	08S	01E	3	WELL	213	160		35	7/18/1977	DOMESTIC
105268	BOWLES JACK	08S	01E	3	WELL	300	240	243	40	4/13/1990	DOMESTIC
20621	SPHINX MOUNTAIN RANCH	08S	01E	3	WELL	160	89	99	50	5/12/1988	DOMESTIC
217022	MERRILL HARRY & MELINDA	08S	01E	4	WELL	560	449		15	12/13/2004	DOMESTIC
225279	DICKINSON JERRY	08S	01E	4	WELL	450	398		12	1/6/2006	DOMESTIC
240442	LEECH JERRY	08S	01E	4	WELL	380	277		35	9/26/2007	DOMESTIC

The total depth (Td) column is the depth drilled, which may be deeper than the bottom of the well as completed. Static water level (Swl) is the level of water measured in the well at the time of installation. Yield is the amount of water the well is expected to be capable of producing as reported by the well driller. Total depth and static water levels are reported in feet below ground surface. Yield is reported in gallons per minute. All data is based upon driller's logs and may not be reported for every well.

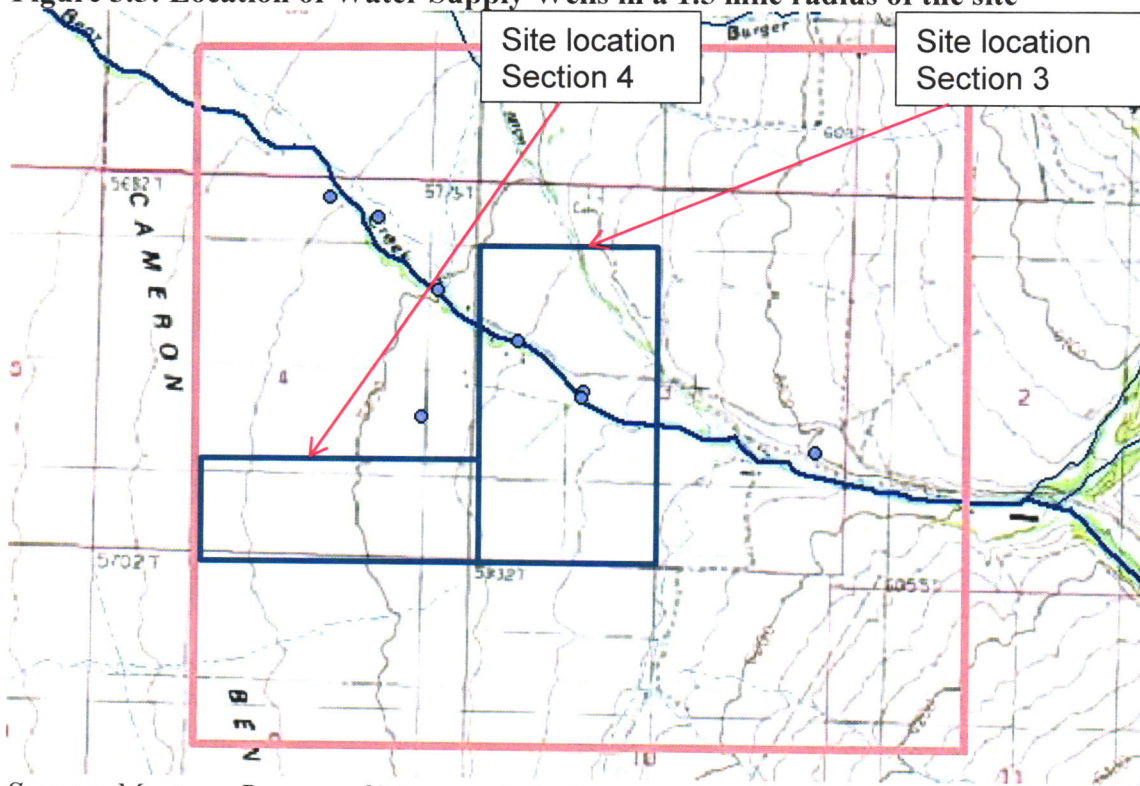
4.0 Terrestrial, Avian and Aquatic Life and Habitats

Bear Creek bisects only the south portion of the proposed site in Section 3 as shown on Figure 3.2. Section 4 has no mapped drainages. Because Bear Creek is a flowing creek, there may be continuous active aquatic systems within the boundary of the proposed site; however, it is unlikely that there would be any significant impact to aquatic life or habitat anywhere on the site since land application is prohibited within 150 feet of this surface water feature. Therefore, the impact to aquatic species is negligible. An intensive survey was not performed to verify the presence of, or impact to, terrestrial or avian species within the land application site because the site is actively used for the grazing of animals and alfalfa crop. However, there is adequate acreage of similar habitat available in the vicinity of the site to accommodate any species that may be forced to relocate. Consequently, any terrestrial or avian species will likely relocate to the adjacent locations.

5.0 Vegetation Cover, Quantity and Quality

The quantity and quality of the alfalfa crop will be enhanced by the proposed activity. The land application of domestic septage provides benefits to agricultural land by the addition of organic matter, moisture and nutrients to the soil. The land application of septage, gray water and grease trap waste at this site will provide additional nutrients, organic matter and moisture, and improve the soil tilth for increased production of alfalfa.

Figure 3.5: Location of Water Supply Wells in a 1.5 mile radius of the site



Source: Montana Bureau of Mines and Geology

2.0 *Water Quality, Quantity and Distribution*

Surface Water

The proposed application sites are located approximately 4.6 miles west of the Madison River. The main drainage mapped on the United States Geological Survey (USGS) Cameron MT 1:24,000 quadrangle is Bear Creek. Bear Creek flows through Section 3, as noted on Figure 3.1. Section 4 has no mapped drainages. Pumpings will not be applied to land within 150 feet of any state surface water, including ephemeral or intermittent drainages and wetlands.

Groundwater

The regional aquifer is composed of alluvial Tertiary basin-fill deposits that are the most prolific source of groundwater in the Madison Valley. Groundwater flows from the margins of the basins towards the center of the basin, where it turns northward, generally parallel to the Madison River. This aquifer includes layers of fine-grained sediments that were shed from the surrounding highlands into the valley. Up to 15,000 feet of sediment have accumulated in the deepest parts of the basin (Kendy & Tresch, 1996). The aquifer is heterogeneous, and includes strata of both high and low permeability. The cumulative effect of many low-permeability zones produces a semi-confined aquifer. Coarse-grained deposits are less common than fine-grained deposits and the basin fill aquifer has the reputation of being relatively impermeable. Some of the wells in the area are unusually productive for the Tertiary aquifer. The primary source of recharge is stream loss, particularly at the valley margins where streams cross from the less permeable bedrock to more permeable basin fill deposits. Leakage from irrigation canals contributes additional recharge. Finally, some recharge is expected from infiltration of snowmelt and rainfall.

Nearby Groundwater Supply Wells

There are seven domestic wells in sections adjacent to and within a one-and a half-mile radius of the proposed land application sites. Based on a review of the Montana Bureau of Mines and Geology (MBMG) database of existing wells, there are three wells in Section 3 and no wells in the portion of Section 4 proposed for land application. The wells in Section 3 meet the required 100 foot setback distance from the proposed application site. The water supply wells in the area are completed from 160 feet to 560 feet below ground level. The static water levels range from 89 feet below ground to a depth of 449 feet. These wells typically yield between 12 and up to 50 gallons per minute.

Figure 3.2: Map of Soil Types Section 4

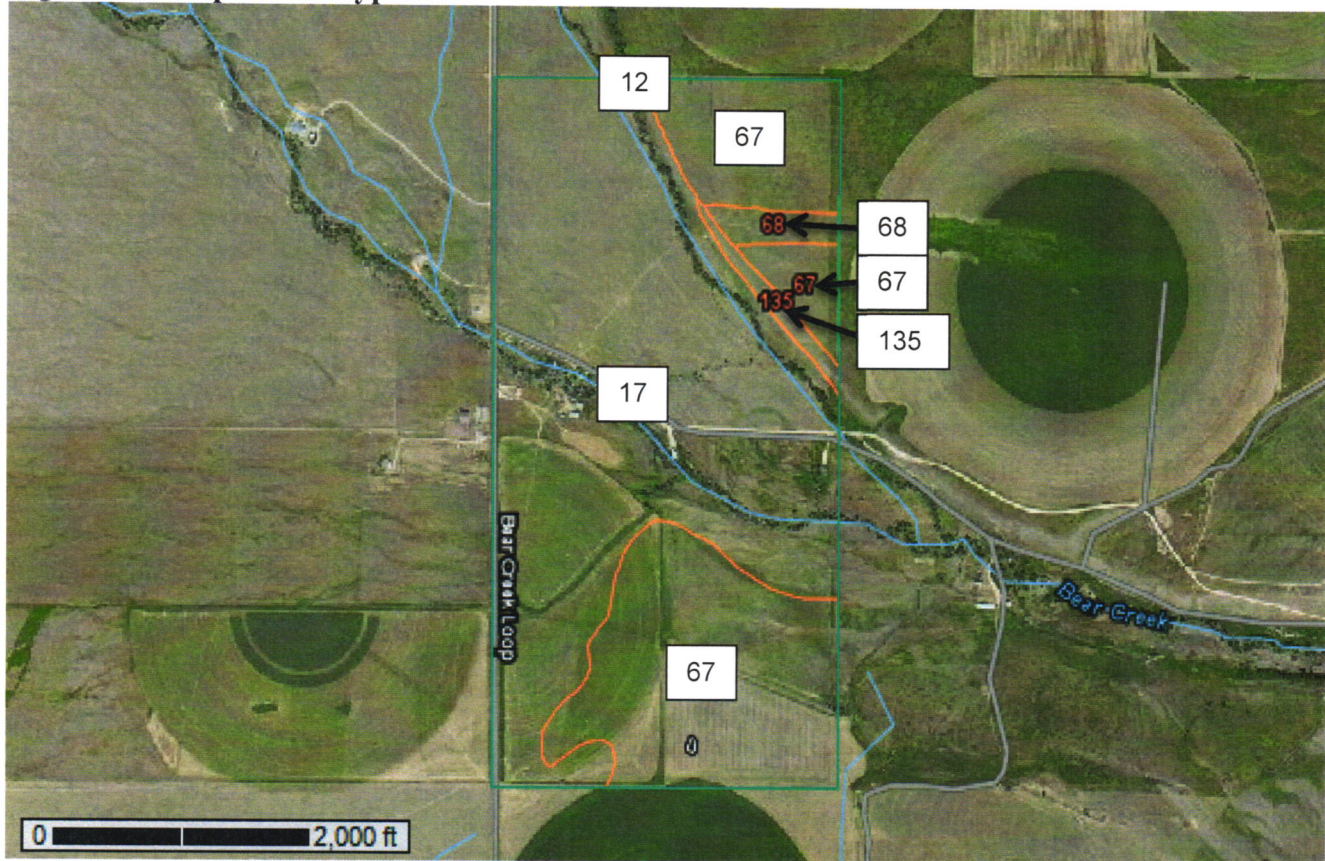


(from: USDA-NRCS, Web Soil Survey, Madison County, Montana)

Soil Key (Figure 3.2)

- 12:** Attewan cobbly loam, cool, 2 to 8 percent slopes
- 17:** Beaverell cobbly loam, cool, 0 to 6 percent slopes

Figure 3.1: Map of Soil Types Section 3



(from: USDA-NRCS, Web Soil Survey, Madison County, Montana)

Soil Key (Figure 3.1)

- 12:** Attewan cobbly loam, cool, 2 to 8 percent slopes
- 17:** Beaverell cobbly loam, cool, 0 to 6 percent slopes
- 67:** Leavitt cobbly loam, 2 to 8 percent slopes
- 68:** Leavitt stony loam, 2 to 25 percent slopes
- 135:** Tiban ver stony loam, 15 to 45 percent slopes

SECTION 3.1 - POTENTIAL IMPACTS OF THE PROPOSED LAND APPLICATION SITE ON THE PHYSICAL ENVIRONMENT (See Table 3.1)

1.0 Site Topography, Geology and Soil Quality – Stability & Moisture

The geographic location of the proposed site is in the Madison River valley, which extends over 350 square miles of southwestern Montana. The topography at the site is characterized by alluvial fans and terraces and lies on the Cameron bench, a fluvial terrace of the Madison River. The alluvial fans slope from the mountain fronts to the fluvial terraces, which flank both sides of the Madison River valley.

The valley is bounded by the Madison Range to the east, the Gravelly Range and Tobacco Root Mountains to the west and northwest, Ennis Lake to the north and Reynolds Pass to the south (Kendy and Tresch, 1996). It is a structural basin, created as the valley floor dropped simultaneously relative to the Madison Range uplifting. The downdropped basin has been filled with Tertiary and Quaternary sediments, which are thickest along the fault at the eastern margin of the valley. These sediments consist mainly of unconsolidated conglomerate with rounded boulders and cobbles in a sandy, silty matrix and is late Tertiary or early Pleistocene in age. The mountains surrounding the basin are composed of bedrock varying in age from Archean (pre-Belt series) to Tertiary (Kellogg and Williams, 2005). These bedrock units are generally less permeable than the unconsolidated basin sediments, although fractures or carbonate dissolution features create significant local flow conduits.

The natural soils in Section 3 of the proposed site consist of gravelly loams deposited on terraces, alluvial fans and drainage ways. The soil is derived from gravelly alluvium weathered from limestone. The primary soil type at the proposed site in Section 3 is the Beaverell cobbly loam. These soils are typically found on 0-6% slopes, are well drained and have a moderate to high ability to transmit water; the depth to groundwater is more than 80 inches. The secondary soil type at the site are the Leavitt cobbly loams which are located on 2-8% slopes, are well drained and have a high ability to transmit water. The depth to groundwater is greater than 80 inches. Minor soil types at the site (2% or less in area) consist of the Leavitt stony loam, which are found on slopes of 2-25% and the Tiban very stony loam, which are found on slopes of 15-45%.

The natural soils in Section 4 of the proposed site consist of gravelly loams. The soils in Section 4 are very similar in composition to the soils in Section 3, as described above. The predominant soil type is Beaverell cobbly loam. The secondary soil type is Attewan cobbly loam. These soils are typically found on 2-8% slopes, are well drained and have a moderate to high ability to transmit water. The depth to groundwater is greater than 80 inches.

The sites are suited for land application of septage because the soils at the sites allow for the storage of nutrients, organic matter and moisture until it can be used by the alfalfa crop grown at the site.

TABLE 3.1 - IMPACTS TO THE PHYSICAL ENVIRONMENT

<u>PHYSICAL ENVIRONMENT</u>	Major	Moderate	Minor	None	Unknown	Attached
1. SITE TOPOGRAPHY, GEOLOGY & SOIL QUALITY, STABILITY & MOISTURE:			✓			✓
2. WATER QUALITY, QUANTITY & DISTRIBUTION:				✓		✓
3. AIR QUALITY:				✓		
4. DEMANDS ON ENVIRONMENTAL RESOURCES OR LAND, WATER, AIR OR ENERGY:				✓		
5. TERRESTRIAL, AVIAN, AND AQUATIC LIFE AND HABITATS:			✓			✓
6. VEGETATION COVER, QUANTITY & QUALITY:			✓			✓
7. UNIQUE, ENDANGERED, FRAGILE OR LIMITED ENVIRONMENTAL RESOURCES:			✓			✓
8. HISTORICAL AND ARCHAEOLOGICAL SITE:				✓		✓
9. AESTHETICS:				✓		✓
10. AGRICULTURE:			✓			✓

CUMULATIVE AND SECONDARY IMPACTS — The cumulative effects of the proposed land application site are minor. The production rate for the alfalfa grown at this site will increase from the addition of nutrients and other organic matter from the materials. Because the site is actively used for alfalfa production and livestock grazing, the proposed activity is consistent with the day-to-day activities of farming and ranching and will not cause a change in the overall aesthetics or agricultural use of properties in the area. There are no recognized secondary effects.

TABLE 3.2 - IMPACTS TO THE HUMAN ENVIRONMENT

<u>HUMAN ENVIRONMENT</u>	Major	Moderate	Minor	None	Unknown	Attached
1. SOCIAL STRUCTURES & MORES:				✓		
2. CULTURAL UNIQUENESS & DIVERSITY:				✓		
3. DENSITY & DISTRIBUTION OR POPULATION & HOUSING:				✓		
4. HUMAN HEALTH & SAFETY:				✓		✓
5. COMMUNITY & PERSONAL INCOME:				✓		
6. QUANTITY & DISTRIBUTION OF EMPLOYMENT:				✓		
7. LOCAL & STATE TAX BASE REVENUES:				✓		
8. DEMAND FOR GOVERNMENT SERVICES:				✓		✓
9. INDUSTRIAL, COMMERCIAL, & AGRICULTURAL ACTIVITIES & PRODUCTION:				✓		
10. ACCESS TO & QUALITY OF RECREATIONAL & WILDERNESS ACTIVITIES:				✓		
11. LOCALLY ADOPTED ENVIRONMENTAL PLANS & GOALS:				✓		
12. TRANSPORTATION:				✓		✓

CUMULATIVE AND SECONDARY IMPACTS — There are no cumulative effects recognized from the applicant's use of the proposed land application site. The proposed site is located on private property that is actively farmed. The proposed activity is consistent with the current day-to-day activities of farming or ranching. There are no recognized secondary effects.

SECTION 3.0 - EVALUATION OF POTENTIAL EFFECTS

This section evaluates the potential environmental effects that may occur on the physical and human environment if the land application site is approved. Tables 3.1 and 3.2 identify the physical and human elements that may be affected by licensure of the proposed site. Each table is followed by a discussion of the potential impacts to the resources that might be affected by the proposal. Generally, only those resources potentially affected by the proposal are discussed. If there is no effect on a resource, it may not be mentioned in the appendix.

Direct and indirect impacts are those effects that occur in or near the proposed project area and might extend over time. Often, the distinction between direct and indirect effects is difficult to define; thus, in the following discussion, impact or effect means both types of effects.

Cumulative impacts are restricted to the net effects of the proposed project because no other known projects are proposed in this area. Secondary impacts are induced by a direct impact and occur at a later time or distance from the triggering action. No secondary impacts are expected.

Evaluation of mitigation, stipulations and other controls enforceable by the agency or another government agency:

The proposed land application site and O&M plan must meet the requirements of the Montana Septage Disposal – Licensure Law, Air and Water Quality Acts, and other Montana environmental laws and regulations as well as county ordinances. Obtaining a license from DEQ and remaining in compliance with the regulations should minimize any adverse environmental effects. The licensee must also operate the site under the guidelines of the approved O&M Plan. The licensee's failure to operate within the constraints of the approved O&M Plan will result in citations by DEQ. Continued or persistent failure to abide by the regulations and the approved O&M Plan will result in enforcement action, which may include penalties and revocation of the site approval.

Recommendation:

DEQ is requesting input from the public regarding this proposal to identify environmental problems or significant impacts that have not been addressed in the EA. The DEQ's recommendation is to distribute the EA to adjacent landowners and interested persons to satisfy the public notification and participation requirements of MEPA.

Findings:

DEQ finds that there would be little or no impacts to the physical and human environment if the septage, gray water and grease trap waste are treated in a manner consistent with the rules and regulations. Therefore, an EA is the appropriate level of analysis and an Environmental Impact Statement is not needed. This treatment option is a beneficial reuse of a waste product.

Other groups or agencies contacted or those that may have over-lapping jurisdiction:

Madison County Health Department

Individuals or groups contributing to this EA:

Ray Smail - South West Septic
Montana Natural Heritage Program
Montana Historical Society State Historic Preservation Office
Natural Resource Information System

References:

Western Regional Climate Center, 2215 Raggio Parkway, Reno NV 89512-1095
Montana Tech of the University of Montana, 2012, Montana Bureau of Mines and Geology,
Groundwater Information Center, <http://mbmggwic.mtech.edu/>
United States Department of Agriculture, 2012, Natural Resources Conservation Service, Web Soil
Survey, <http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm>

EA prepared by:

John Collins- DEQ Permitting and Compliance Division, Waste and Underground Tank Management
Bureau, Solid Waste Section

Date: July 23, 2014

SECTION 2.0 – ALTERNATIVES CONSIDERED:

Solid Waste Section Roles and Responsibilities:

The DEQ Solid Waste Section is responsible for ensuring that the activities proposed under the Solid Waste Management Act, the Septage Disposal Licensure Act and the Motor Vehicle Disposal & Recycling Act are in compliance with current regulations. A land application site must first be approved by the county in which the site is located before the request for licensure is submitted to the Solid Waste Section for review and approval. Each licensee is responsible for following the Administrative Rules of Montana for Cesspool, Septic Tank, and Privy Cleaners and other restrictions and requirements put in place by the county in which the land application site is located.

The following provides a description of reasonable alternatives whenever alternatives are reasonably available and prudent to consider:

A decision by DEQ is triggered when the applicant upholds the request for licensure of the proposed activity at the proposed location. The applicants, however, may at any time choose to withdraw the application by exercising the “no-action” alternative. If the “no-action” alternative is chosen, the applicant could seek to locate a land application site elsewhere.

Alternative A: The “no-action” alternative. Under this alternative, a final decision by DEQ is not required because the applicant will have chosen to withdraw the application for approval of the land application site. By withdrawing the application from consideration by DEQ, the applicant could seek an alternative site for the proposal. Although it is plausible, the applicant’s selection of this alternative is unlikely. Rather, the applicant will likely continue the request for approval of the proposed activity at the proposed site.

In the absence of the applicant’s selection of the “no-action” alternative, and prior to the DEQ’s final decision, two other possible alternatives were considered during the preparation of this EA.

Alternative B: Under this alternative, DEQ denies the new disposal site application because the applicant failed to provide information needed to address any deficiencies identified during the review of the application and/or the public participation phase. The decision to deny the application is unlikely because DEQ has found the application complete for the purpose of the environmental review. Deficiencies could be due to an unforeseen shortfall in meeting site setback or locational requirements, licensing criteria, regulatory criteria or legal issues, or the ability of the applicant to mitigate a potentially substantial impact to human health or the environment. If denied, the applicant could locate, investigate and apply for a license at another site suitable for the proposed activity.

Alternative C: Under this alternative, DEQ approves the use of the land application site as proposed by the applicant. Several factors support the viability of this option:

1. This site meets all of the requirements of the Septic Disposal Licensure Act. The site soils, slope, depth to ground water, approvals and setback requirements have been met;
2. The sites are fenced, rural private property; and,
3. All activities will be performed in accordance with an approved Operation and Maintenance Plan (O&M) and verified by periodic inspections by DEQ and/or Madison County Environmental Health Department personnel.

In consideration of these alternatives, the potential environmental impacts of Alternative C were evaluated for the proposed project based on the information provided and DEQ’s research based on published data for the area surrounding the proposed site. The results of DEQ’s evaluation of potential environmental impacts related to the proposed facility are summarized in Section 3.0.

Site Operation and Maintenance:

The land application of septage, gray water and grease trap waste is considered the beneficial use of a waste product when the material is applied in accordance with the laws and rules governing land application. The operational requirements for land application are outlined in Table 1.3.

Table 1.3: Land Application Site Operational Requirements

ARM Reference	Site Restrictions/Requirements
17.50.809(10)	All non-putrescible litter must be removed from the land application site within 6 hours of application.
17.50.809(12)	Pumpings may not be applied at a rate greater than the agronomic rate of the site for crop nitrogen requirement on an annual basis.
17.50.810(1)	Pumpings may not be applied to flooded, frozen or snow-covered ground if the pumpings may enter state waters.
17.50.811(3)	Pumpings may be applied only if the person first performs one of the following vector attraction and pathogen reduction methods: <ul style="list-style-type: none">• injection below the land surface so no significant amount remains on the land surface within one-hour of injection;• incorporation into the soil surface plow layer within 6 hours of application;• addition of alkali material so that the pH is raised to and remains at 12 or higher for a period of at least 30 minutes; or,• management as required by 17.50.810 when the ground is frozen.

The acreage available for land application will be rotated on an annual basis so that parcels used one year will be inactive the next year. This rotation allows the vegetation or crop of choice to utilize the nitrogen and other nutrients added from the land application process.

Pumpings will be land applied using a dispersive mechanism consisting of either a spreader bar or a splash plate. The dispersive mechanism applies the waste in a wide, thin, even layer at a beneficial rate. Pumpings will be incorporated into the soil surface plow layer with a tractor and tillage equipment within six-hours of application.

Land application will occur as-needed at a rate not exceeding the Annual Application Rate (AAR) in gallons per acre. For septage, the AAR is calculated based upon the production of a specific crop or grass, as follows:

$$\text{AAR} = \text{Crop Nitrogen Requirement}/0.0026.$$

In this case, the landowner currently uses the property for the production of alfalfa and as pasture for livestock. Alfalfa has a minimum nitrogen requirement of 75 pounds/acre. The resulting AAR of 28,846 gallons per acre is equal to approximately 1.06-inches of liquid per acre. For comparison, the average annual precipitation received during the month of September is approximately what would be land applied per acre per year at the proposed site (see Table 1.2). Most septic tanks are between 1,000 and 1,500-gallons each. Depending upon the individual volume of tanks pumped by the applicant, waste from 19-28 septic tanks could be land applied on a per acre per year basis. Using a conservative approach, that waste from 24 septic tanks could potentially be land applied per acre; each individual septic tank would contribute approximately 0.044-inches of liquid per acre per year.

Site Climate:

The climate in the area proposed for land application is typical of the semi-arid regime in the Ennis area. Table 1.2 provides a summary of monthly climate information. The winters in the Ennis area are long and moderately snowy; the summers can be hot and dry. The majority of precipitation falls during the months of May, June and July, while February and December are the driest months. The average annual precipitation is approximately 12.08 inches.

Table 1.2: Monthly Climate Summary

ENNIS, MONTANA (242793)													
Period of Record Monthly Climate Summary													
Period of Record : 1/ 1/1918 to 3/31/2013													
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	32.8	37.5	45.0	55.3	65.3	73.5	83.1	81.5	71.3	59.5	43.7	34.6	56.9
Average Min. Temperature (F)	13.6	16.5	21.8	28.8	36.1	42.7	47.5	45.3	37.9	31.0	22.8	16.2	30.0
Average Total Precipitation (in.)	0.37	0.36	0.67	1.14	1.87	2.32	1.22	1.14	1.13	0.91	0.54	0.42	12.08
Average Total SnowFall (in.)	6.3	4.7	6.5	4.5	1.1	0.3	0.0	0.0	0.3	1.6	5.1	5.7	36.1
Average Snow Depth (in.)	1	1	0	0	0	0	0	0	0	0	1	1	0
Percent of possible observations for period of record.													
Max. Temp.: 99.6% Min. Temp.: 99.3% Precipitation: 99.6% Snowfall: 69.4% Snow Depth: 59.5%: 65.5% Snow Depth: 52.4%													